

Politics of Digital Learning – Thinking Education with Bernard Stiegler

By

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Abstract

Bernard Stiegler is known as a leading philosopher of technics. In *La technique et le temps I-III*, on the basis of the philosophical groundwork of Husserl, Heidegger and Derrida, and of philosophico-anthropological theories on technics (Leroi-Gourhan and Simondon), he has developed an original interpretation of technics as an externalized epiphylogenetic memory. Technics as memory 1) remembers in the place of the human being, who appears therefore as a forgetful being and 2) is collective and constitutes a technological community, that is different from any ethnical-political community. In many later books, Stiegler has explained the social and political consequences of contemporary technology. Technics are not neutral. According to Stiegler, contemporary digital technologies claim to inform but more fundamentally they produce pulsions. Their way of doing so is destructive to psychic and collective individuation and leads to a generalized proletarianisation, where the problem is not biopower or capitalism but lack of attention and desire. Can the digital world become a new public space? Stiegler is quite pessimistic, but in principle, to some extent, it is possible to seize and convert ‘the means of memory production.’

How to evaluate modern digital learning environments in the light of such a diagnostic? Stiegler's insights are invaluable in the task of evaluating new learning technologies, because he analyzes political community from the double point of view of technology, on the one hand, and of the care of younger generations, on the other hand. In this article, I present Stiegler's philosophical theory and show how it can be applied to education and digital learning environments.

Keywords: Bernard Stiegler, Memory, Politics, Control Society, Education, Digital Learning Environments.

Main text:

Today, education is either already thoroughly digitalized or under pressure to become so soon.¹ From daycare to higher education, tablets and computers are being recommended instead of pen, paper and books, and electronic learning environments are favoured instead of old-fashioned contact teaching. The hype of e-learning rejects all criticism as backwardness. However, such an overwhelming technological change is not only a matter of modernizing instruments of learning. It is a matter of producing new kinds of psychic and collective structures that, for their part, produce new kinds of cultural and political situations. These are not political in the sense of orienting the choice between the traditional options of left and right, but in the sense of operating an archi-political passage from the disciplinary society described by Foucault to the control society theorized by Deleuze (Deleuze 1990, Stiegler 2004a)².

Among contemporary philosophers, many are interested in archi-politics – that is, philosophical foundations of politics – but Bernard Stiegler has the particularity of analyzing it from the double point of view of technology, on the one hand, and of the care of younger generations, on the other hand. The latter amounts to the question of education which is, according to Stiegler, 'the first question of philosophy' (Stiegler 2008, p. 195-6³). This is why his insights are invaluable in the task of evaluating new learning technologies. Being a philosopher, he does not analyze specific technological dispositifs but deploys a kind of a general existential analytics of technics and care. In what follows, I will present an outline of these philosophical ideas in order to show why the question of learning technologies is not only a technological question.

Politics and education today

'Philosophy, in particular, is *essentially* a political discourse. And politics, as a modality of a process of individuation, is *essentially* a *care* of spirit and of culture' (Stiegler 2004b, p. 141). This does not mean that philosophy should tell 'what must be done,' but that philosophy, insofar as it questions the sense of human existence, also has to question the sense of human coexistence. Like many other continental philosophers around the turn of the century, Stiegler sees it as his

¹ The author of this article lives in Finland, where secondary schools have launched a reform in 2017-2018 which aims at complete digitalization. Also primary schools and universities use digital technologies extensively.

² Bernard Stiegler often refers to Gilles Deleuze's 'Post-scriptum sur les sociétés de contrôle,' and his book *De la misère symbolique 1. L'époque hyperindustrielle* (2004a) is directly inspired by it.

³ All translations from French are mine.

responsibility to examine the foundations of politics by investigating the fundamental structures of being-together. Like not so many of them, Stiegler goes as far as defining politics as the art of producing the unity of a community through the desire of a common future (Stiegler 2004b, p. 44; Stiegler 2004a). By this, Stiegler does not mean to say that a political community should be a community of like-minded people who share the same aims. On the contrary, he starts by marking his agreement with Hannah Arendt's theory of *vita activa* (Stiegler 2004b, p. 161-; Arendt 1958), which is essentially a space of plurality that is open to unheard-of new beginnings, and with Jacques Rancière's idea of the political community as a space of *disagreement* in which consensus is never given (Stiegler 2004a, p. 19; Rancière 1999). Sharing this starting point, he then marks his difference by claiming that in her definition of *vita activa* as labor, work and action, Arendt does not pay enough attention to *work*, and that in his description of disagreement as the *sharing of the sensible*, Rancière does not pay attention to the fact that this sharing is effectuated *technically*. Stiegler's own contribution to the question of politics is precisely the exposition of the political implications of technics in the constitution of the political community.

The perspective of technics clarifies his idea of politics as a desire of common future. He presents this idea against the traditional idea that a historical community is a community of destiny that shares the same origin and eventually tends towards a common future. On the contrary, Stiegler thinks, following the paleo-anthropologist André Leroi-Gourhan, that the 'commonality' of a human group precisely does *not* depend on a common past, for instance on a projected ethnical or mythological origin, but on the contrary on a desire of building a common future together, whatever the differences between individuals might presently be and whatever their disagreements concerning the desirable future (Stiegler 2004b, p. 44; Stiegler 1998, p. 43-65). Technics is something that helps to flee from the narrow limits of an ethnical community towards the opening of new horizons.

How to think the political role of technics in philosophy? For most philosophers, technics is only an instrument that does not have a political role of its own. Even modern philosophers such as Arendt and Rancière understand technics instrumentally, which Stiegler takes to indicate that they do not really see it. In the middle of the 20th century, philosophers such as Theodor Adorno and Max Horkheimer, Jacques Ellul, and above all Martin Heidegger, came up with another interpretation of technics: they saw technics as the horizon or as the framework of the modern world, as the technical System that makes the world go round, and human beings with it, or as the *Ge-stell* which uses and dis-poses of humans and nature (Heidegger 1977, p. 19).⁴ In

⁴ *Ge-stell, En-framing*, is Heidegger's famous neologism for the essence of modern technology as the horizon in which both men and nature appear as 'standing reserve'.

different ways, these thinkers showed how, under industrial capitalism, technics has become a planetary machinery that changes nature into resource, human beings into human resources, and reason into calculative thinking that animates the system. The totalitarian rule of technique is eminently political, in the sense that it invades the entire lifeworld, but at the same time it kills politics and changes it into simple administration of human beings and things, that is also described by Michel Foucault's term *biopower*.

For Stiegler, these analyses are important but insufficient. Technology itself has evolved enormously since the middle of the 20th century. The way in which our world is overdetermined by digital technologies cannot be brought back to the way in which fossil- and nuclear-based heavy industrialization marked the world half a century ago, although the latter is still included in the former. Even though the abovementioned theoreticians of industrialization occasionally mentioned cybernetics, they were far from guessing the explosive growth of modern information technologies, which have according to Stiegler really effectuated an epochal change. Following Deleuze, Stiegler thinks that with the omnipresent digital technologies, the disciplinary societies theorized by Foucault have given way to control societies.

Stiegler describes the contemporary control society for instance in *Prendre soin. De la jeunesse et des générations* (Stiegler 2008), *Ce qui fait que la vie vaut la peine d'être vécue. De la pharmacologie* (Stiegler 2010), and *Mécréance et discrédit* (2004, 2006) (translated as *The Decadence of Industrial Democracies*). According to him, contemporary society is characterized by malaise that appears as care-lessness (*incurie*) understood literally as existence without *care* (*soin*, care of something or of somebody, that Stiegler opposes to *souci*, which translates *Sorge*, care of self in Heidegger's *Being and Time*). Carelessness threatens especially educational institutions, both scholarly and superior. Naturally Stiegler's perspective is marked by the French public school system, but it is of interest in other countries as well, since the aims of the French public school are not unlike those of public schools all over the world. In a general manner, public schools and universities used to reflect the ideals of Enlightenment and especially Kant's interpretation of Enlightenment as reaching majority: beyond acquisition of knowledge, the aim of education is to cultivate critical skills and the capacity of public debate, which are the necessary prerequisites of democratic politics (Stiegler 2008, p. 41-47). Stiegler claims that today all educational institutions – families, schools and universities – have given in to 'program industries,' whose aim is not to form citizens through education but to form consumers through marketing. Incidentally, they produce 'stupidity' by drowning people in a constant flow of information in which attention and finally also conscience become impossible, and this is how they provoke a 'generalized proletarianization,' in which youth are pushed to prematurity at the same time as adults are made to give up their majority, so that the capacity of responsibility disappears

everywhere (Stiegler 2010, p. 44; Stiegler 2008, p. 74, 80-84, 135-170). Insidiously, this causes what Stiegler calls a ‘global attention deficit disorder’ – and this ‘at the very moment when the formation of a planetary consciousness becomes the condition of the very survival of non-inhuman beings [that is, us humans]’ (Stiegler 2008, p. 319).

Being a philosopher of technics, Stiegler traces these changes in public sphere back to changes in available technologies. At the era symbolized by Kantian Enlightenment, ‘majority understood as critical capacity presupposed reading and writing’ (Stiegler 2008, p. 42). Reflection included the operation of exteriorizing thoughts in writing, like calculation included operations written on paper. Reflection also included discussion in public sphere made possible by the technology of the printing press. Printed text was the instrument of thought and public life, the principal way of communicating, sharing and debating ideas, entire arguments and contradictory debates. Contemporary digitalization has changed the situation considerably. Not that it could not be used in the same process of private and public reflection: it can and it is. But the process has nonetheless undergone a significant change, not only because many intellectual functions have been externalized to machines, but especially because the contents are increasingly produced by industries whose aims are purely commercial, and not the augmentation of critical consciousness on matters of general interest. In order to produce a maximal commercial benefit, these industries on the contrary enhance the flow of stimuli so as to prevent the formation of critical thought (which would reveal their vacuity). According to Stiegler, although the industrial programs appear to favor strong emotions instead of reflection, they only stimulate pulsions and therefore, paradoxically, end by suppressing desire and provoking a general state of depression (Stiegler 2008, p. 30). The downside of Enlightenment politics was criticized by Foucault who showed how public education was also a part of state-run biopower the aim of which was the proletarianizing formation of effective workforce rather than emancipation along Enlightenment ideals. The downside of contemporary control society is the proletarianization of the cognitive function through the loss of attention, consciousness and desire. Stiegler does not comment especially digital learning environments, but it is easy to see that if they contribute to the ‘elimination of cognitive faculties which is replaced by mere dexterity in informatics’ (Stiegler 2008, p. 326) they contribute to the ‘deformation’ and ‘disindividuation’ caused by the ‘global attention deficit disorder’. But Stiegler also considers that another use of digital technologies is possible, if users and in this case educators seize the means of digital production differently (Stiegler 2006b).

How can simple technological changes have such fundamental psychological, social and political consequences? Stiegler's analyses of the contemporary society presuppose his seminal series *Technics and time* (1994, 1996, 2001) in which he displays a novatory analysis of technics as a fundamental constituent of human existence. For Stiegler, technics is not merely an optional complement of human existence, that the human beings could also live without, but it is its originary supplement without which there is no human existence.

Philosophically, this theory starts as a contribution to phenomenology, for it parts from Edmund Husserl's conception of consciousness and Heidegger's idea of *Dasein* by continuing Derrida's idea of the way in which writing contributes to thinking. Especially in his readings of Husserl, but also of Heidegger, Stiegler criticizes them for unduly downplaying the part of technics in human co/existence. In his own account of the role of technics he is especially inspired by Derrida's analyses of writing as a *pharmakon* of memory, which is the basis of his general analysis of technics as prosthetics (more precisely see Lindberg 2016).

Following this suggestion, Stiegler analyses technics as memory: it 'does not help memory but *is* memory' (Stiegler 1996, p. 83). To put it in a nutshell, Stiegler answers to Heidegger's idea of time as *Dasein*'s being by introducing memory as the reality of the time which is the being of man. Stiegler divides human memory in three parts: genetic memory is our 'biological programming'; epigenetic memory is formed by our personal experiences, whether conscious, unconscious or bodily; and epiphylogenetic memory is the impersonal collective memory that is contained in technical objects (Stiegler 1994, 183-187). Technical objects are 'memories' in the sense that they contain knowledge of the world and especially of the way in which the human being can relate to it. For Stiegler, technical objects are *not* extensions of human intentions, but reflections of the world and especially of the way in which the world is given to man in his activity. This is true already of the simplest archaic objects: a prehistoric tool made of flintstone already 'knows' how stone breaks or how wood or bone can be cut. A more familiar example is the wheel, that knows how to produce an endless movement. Because the tool knows this, the tool's user does not need to know it. The user of the wheel does not need to invent endless movement because the wheel knows it already, and this is why the technical object allows a certain ignorance; in some cases, reliance on technics can even encourage outright stupidity. However, the user can acquire other, properly technical skills such as how to drive a car skillfully. Fundamentally, the technical object is a memory of the world's workings, and because the object remembers this, the user can forget about it. The technical object shows the human being as a fundamentally defective existent. On the one hand, s/he is defective because s/he needs technical objects to patch his/her natural weakness. Stiegler illustrates this idea with a Greek myth which tells how the titan Epimetheus, who in the beginning of the

world created men and animals, forgot to provide the human being with any natural advantages (such as sharp teeth and nails, thick fur, quick feet...). The resulting weakness of man was why Epimetheus' brother Prometheus had to give men the gift of technics in the first place. Technics patches the 'epimethean' natural weakness, nudity and deficiency of man. On the other hand, once the human being has technical prostheses to remedy to his/her natural deficiency, s/he has a tendency of relying on the technical objects and of forgetting how the world really works. Technics is a memory in the same way as a text that has been written down: it is a *pharmakon* that conserves knowledge outside and unbeknownst of active remembrance and knowledge. This is how technics can also encourage weakness and ignorance: it can entertain and even increase the deficiency it was supposed to overcome.

This is why, as Derrida has shown, technical objects function like *prostheses*. They certainly help human existence, like eyeglasses and medicaments supplement his body and like books and computers supplement his memory. In the end, human life would not survive without its dead supplements. At the same time, the prosthesis remains a dead piece that supplements life without really becoming one with it: it *haunts* it like an alien element. It is not only a docile servant of human intentions, for it has its own logic that can produce its own effects, like a medicament can produce side effects and intoxications, and a book can produce misunderstandings.

These examples show how technical objects are not as neutral as classical philosophy would have it. As Simondon has shown, they have their own mode of being, producing their own effects and constituting their own associated milieus (Simondon 2005). They format human existence that uses it: a body adapts to its prostheses and to the technical equipments it uses (like you can be accustomed to a drug or dependent on the memory of your computer). They also format the social and natural world in which they function. For instance, the car has changed our social relations, our cities, our landscapes and the entire climatic system of the Earth; and today digital technologies are changing our entire social, economical, political and even natural environment.

Stiegler also underlines that technical objects and systems are always collective. A material *object* can belong to somebody, but a technical object is defined by its *functioning* that is reproducible in an indifferent number of material objects: being the same to all users, the functioning acts like a collective memory. Technical functions create their own technical communities, that is to say, communities of those who use a certain technology. At the same time, because the technical principle is fundamentally collective, it represents the presence of the community in me. When I use a technical object, I operate as people in my community are supposed to operate. This is much more than a choice, on the contrary, it is very difficult not to adapt to the technical environment in which one finds oneself. For instance, today, a student or a researcher are not really free to

extract themselves from technologies using fossil fuels or from the Internet. Through the object, the community operates in me even independently of my wanting it and, often, of my being conscious of it: so to say, it is like the collective unconsciousness in me. In this sense, technics always has an alienating aspect, it determines me as *das Man*, as Heidegger would put it. This is why the question of technics is so profoundly political: but whether it is emancipatory or alienating depends on the type of relation it establishes between its individual and collective uses.

Technics does not only assist life in the sense of bodily needs, but life in the sense of the 'life of the spirit.' After all, technics is memory and therefore it has to do with consciousness: it provides the mechanical memory that is the indispensable *non-conscious supplement of consciousness*, that has also been theorized by N. Katherine Hayles (Hayles 1999). In *Technics and time 3*, Stiegler explains the role of technics in the constitution of consciousness through a debate with Kant and Husserl. He borrows the distinction that Husserl makes in his description of the temporal object between 'primary retentions, which belong to the present of perception, and secondary retentions, that are the past of consciousness that can be reactivated in the imagination by a play of memory' (Stiegler 2001, p. 69). Stiegler complements this distinction with the idea of tertiary retentions that he understands 'in a very general manner as the prosthesis of the consciousness without which there would be no spirit, no revenance, no memory of a past that we have not lived by ourselves, no culture' (Stiegler 2001, p. 70). Stiegler then compares this with Kant's distinction, in his analysis of the pure schematism of understanding, between the three syntheses of apprehension, reproduction and recognition. While the synthesis of apprehensions functions like the primary retention and the synthesis of reproduction functions like the secondary retention, Kant fails to properly understand the role of the synthesis of recognition as tertiary retention (Stiegler 2001, p. 73,75). Kant certainly sees that the synthesis of recognition reunites the syntheses of apprehension and of reproduction: this is how it actually synthesizes the object itself. The synthesis of the object happens as the synthesis of apperception which, in the end, *is* the subject itself as pure temporal flow (Stiegler 2001, p. 77-79). But Kant does not see that the synthesis of recognition also requires the mediation of a technical supplement that functions as a 'prosthesis of the understanding' (Stiegler 2001, p. 82, 84). In Kant's own case, the prosthesis of understanding his own thought would be the very book that he is writing, *The Critique of Pure Reason*. But in a more general sense, the tertiary retention or the synthesis of recognition is any *material prosthesis* that helps and directs consciousness in its selection among primary and secondary retentions and in its effectuation of their unity. This is the role of technics in the constitution of the consciousness. Sometimes technics is a prosthesis of memory that contributes directly to consciousness; sometimes technics is just any kind of a technical object, that contributes to the consciousness indirectly, but does it nonetheless.

Technics provides a framework that directs, not directly our consciousness, but the preindividual stock of retentions that conditions our acts of consciousness.

In this way technics contributes to the schematization of consciousness or, to put it in other words, it contributes to the composition of the preindividual field. What interests Stiegler is not only a general theory of consciousness but the process of *individuation* that it contributes to. According to him, individuation happens through a selection of primary retentions among all things that happen to me: this constitutes my singularity. The chosen primary retentions then become secondary retentions that direct further selection, in the flow of events, of primary retentions. But there are also secondary retentions that do not come from my personal experience but from a collective inheritance of secondary retentions to which I *adapt*: they, too, contribute to the preindividual stock of retentions that enables and directs my individuation. The source of these collective retentions is the epiphylogenetic, tertiary retentions – that is to say, technical objects and especially technics of consciousness like works of language and culture (Stiegler 2004a, p. 107-).

Now, the principal political problem today according to Stiegler is the following: “Today the function of cultural industries and program industries is to take control over the process of constitution of collective secondary retentions, to substitute themselves to inherited preindividual stocks, and make us adopt retential stocks that have been designed along the needs of marketing” (Stiegler 2004b, p. 154). Let me now explain what this means and why this would be today’s principal political problem.

Contemporary proletarianization

Stiegler thinks that politics is a modality of a process of individuation. Stiegler’s account of the relations between the individual and the collective are based on Gilbert Simondon’s theory of psychological and collective individuation (Stiegler 2004a, p. 105-, Simondon 1964). Simondon thinks that individual individuation depends on the collective individuation, in which it is inscribed so that, as Stiegler puts it, ‘I am I only insofar as I belong to a We’ (Stiegler 2004b, note 1). Despite the Hegelian echo of this expression, it is meant to express quite the opposite of the Hegeliano-Heideggerian idea of historical existence which determines the individual entirely in function of his/her historical community. For Simondon, neither individual nor collective identities are ‘destined’ – indelibly given – but they are in a constant state of becoming. What is more, although I am individuated in function of a group, my individuation does not coincide with it, all the more so because I can belong to many groups at the same time that are not always in harmony with one another.

Each process of individuation – individual and collective – appears to tend towards a stability – but as far as they are processes, they are incapable of reaching stability, because each tendency is countered by contrary tendencies that keep all of them in a *metastabile* state. The term ‘metastability’ is transferred into philosophy by Simondon, who discovers it in studies on the formation of crystals, and who then applies it further everywhere, from physics and biology to psychological and collective individuation (on the ontology of individuation see Grosz 2012, Sauvagnargues 2012, and Scott 2014). For Simondon, ‘metastability’ is a desirable condition: stability equals death, because a stable being cannot change anymore, except through an external impulsion. On the contrary, a metastable being, for instance a saline liquid capable of crystallisation, contains in itself different tensions and potentialities which can be liberated so that the being needs to restructure itself – transform itself. In doing so it acquires a new equilibrium which is also metastable, capable of change. What provokes the changes of metastable systems is a local singularity that can be internal or external – like the ‘seed’ that provokes the ‘growth’ of a crystal. ‘It would seem that a metastable equilibrium could only be broken by a local introduction of a singularity [...] that can break the metastable equilibrium. Once the transformation has started, it will propagate, for the action which first took place between the seed and the metastable body will then act from next to next between transformed parts and parts that have not yet been transformed’ (Simondon 1964, p. 95). Transduction is this operation in which an action is exerted from next to next between already transformed elements and elements that have not yet been transformed. Simondon uses the term transduction in order to provide an alternative to induction and deduction, which explain change by external impulses or aims, and are actually incapable of explaining transformation due to the proper potentiality of a being.

Stiegler is particularly interested in Simondon’s idea of a preindividual milieu. It is the multiplicity of tensions and potentialities that do not have an individual form yet, but that make individualisation possible: the preindividual milieu is a metastable situation in which multiple transductive processes are possible. It connects the I with the We and contains the potentialities of their becomings. In Stiegler’s terms, the preindividual milieu of a human community contains the retentional dispositifs that are conditioned by the technical milieu in which humans live. The technical milieu also has its own individuation in which it tends to become a technical system – for technical objects cannot exist alone, they only *function* in technical ensembles (as Simondon says) and systems (as Stiegler adds) – and functioning is their way of making sense. Stiegler’s idea is to some extent homologous with Heidegger’s thinking of technique: indeed, everyday world is first of all a world of tools (*Zeng*), and especially our modern world is the world of technique, its horizon is a technical *Ge-stell*, which predetermines our possibilities. However, Stiegler is also critical of

Heidegger's idea of the epoch of technique as a total, unitary destinal structure, because Stiegler, following Simondon, rather sees the technical situation as a field of multiple metastable becomings that constitute different milieus. Rather than thinking technics as an overwhelming destiny, Stiegler tries to think it as an ambiguous *pharmakon* that also contains potentialities for unexpected becomings.

If politics is, as Stiegler thinks, a question of individuation, the constitution of the preindividual milieu that contains the potentialities of individuation is a primordial political question. In the domain of the political, the preindividual takes the form of affective and sensible potentialities, that constitute the domain of the aesthetic. According to Stiegler, politics is the desire of a common future, and 'Such a desire presupposes a common esthetic ground. Being-together is the being-together of a *sensible ensemble*. A political community is therefore a community of feeling' (Stiegler 2004a, p. 18). Stiegler does not understand the esthetic community in the romantic sense of poetic politics, the danger of which is best illustrated by Heidegger [Lacoue]. As we have already seen, Stiegler understands the political like Rancière as a space of *disagreement* in which consensus is never given. Like Rancière, Stiegler thinks that the disagreement that is constitutive of politics carries firstly and foremostly on esthetic matters: it is an esthetic disagreement, a disagreement on the *sharing of the esthetical* (*partage du sensible*), which does not mean what is beautiful and what is not, but much more fundamentally what is visible and what is not, which, according to Rancière, amounts to asking who and what is visible on the scene of politics and can take part in its deliberations. It is in this sense that the ground of politics, the archi-political ground of any political activity, or as Stiegler would say the preindividual milieu, is 'esthetic.' But as we saw, Stiegler criticizes Rancière for overlooking the way in which the domain of esthetics is conditioned by technics.

In principle, technics provide chances for individualisation. Using available techniques can serve individualisation, for instance, when different techniques of writing have enhanced human capacities of expression and of communication. Also inventing new techniques can lead to new kinds of technical and human individualisation, like when the invention of the cinema has led to entirely new ways of esthetic expression. Above all, with new ways of expressing, such techniques create new ways of perceiving the world.

However, according to Stiegler, in our times, the most important industrial techniques have become an obstacle to individual and collective individualisation, that is, to politics. This is because the most important products of contemporary industrial technologies are not material products, anymore, but the very esthetic sensibility that constitutes our preindividual milieu. In *The Decadence of Industrial Democracies* as well as in the twin volume on esthetics that accompanies these books *De*

la misère symbolique I-II (2004-2005), Stiegler claims that the most important industrial technologies today are the program industries, by which he understands especially television, film and music, but also the increasing importance of digital reality, which is of course much more important today. The distinctive feature of program industries is that they do not fabricate products that we might want to consume, but ourselves as consumers (Stiegler 2004a, p. 23). As Stiegler says: 'In our epoch, the symbolic is produced industrially, and esthetics has become the weapons and the theater of an economical war. This results in a misery in which experience is substituted by pure conditioning' (Stiegler 2004a, p. 13).

Such a misery is a symbolic misery. Symbolic misery means that the preindividual milieu in which people live gets so saturated with prefabricated symbols that they stop participating in the symbolic production themselves. Not only the symbols they receive are those of overconsumption on the other hand, and anxious paranoid politics on the other hand, but what is more important, they stop producing symbols by themselves. The impossibility of producing their own symbols leads to a general loss of libido and of primary narcissism. Without libido, without desire, symbolic production and participation are impossible. 'This is how cultural, informational and cognitive capitalism constitute an extremely worrisome problem of industrial ecology: the mental, intellectual, affective and esthetical capacities of humanity are seriously threatened [...] By symbolic misery I mean the loss of individuation which results from a loss of participation in symbolic production [...] the fall of the symbolic is a fall of desire, that is to say, disintegration of the social, a total war' (Stiegler 2004a, p. 33). This is how hyperindustrialisation produces a new kind of an individual: an individual who is disfigured insofar as s/he cannot be individuated anymore (Stiegler 2004a, p. 100). His attention is captured, he cannot be attentive to his own experience anymore (Stiegler 2004a, p. 130). This is, according to Stiegler, the core of contemporary proletarianisation: not the proletarianization of the worker who loses his working skills and gets reduced to his pure working force, but the proletarianization of the consumer who loses his capacities of esthetic production and is reduced to mere consumption of ready-made symbols. Close to Adorno and Horkheimer's analyses of cultural industries, Stiegler is different from them insofar as he does not connect cultural industries to authoritarianism, anymore, but rather to the loss of libido that makes democracy collapse from the inside.

Learning in a digital world

Stiegler does not analyse in detail the digital learning environments, not to speak of the total digitalization of life that has become much more intensive since the publication, from 10 to 15 years ago, of *The Decadence of Industrial Democracies* and *De la misère symbolique*. As the contemporary

digital world is by nature a gigantic memory, it is nonetheless easy to analyse it in Stieglerian terms of tertiary retentions. Firstly, Stiegler underlines the risks of leaving digital content production to entertainment industries that drown their consumers in a data flow which formats their tertiary retentions in such a way that the formation of attention and of critical capacities becomes difficult. In education, similar techniques (navigating, quick reading and copypaste writing in an overwhelming data flow) can lead to apparently good learning outcomes, but they do not lead to maturation if they suppress careful critical reading and autonomous production, for these are the only ways of contributing to the formation of one's tertiary retentions. However, many popular participatory projects, fanfictions, digital art projects and others show that it is also possible to seize the means of digital production for the profit of genuine self-expression. Secondly, because most important contemporary technologies are fundamentally memories, they rise questions concerning politics of memory, especially of access, manipulation, and privacy. Cases like that of Cambridge Analytica have revealed the risks of the digital reality, although it is also important to avoid paranoia and to remember that contemporary digital reality is not a totalitarian system (nor the Singularity that looms in Science Fiction) but a multitude of interconnected milieus that are by nature impersonal, collective and nonconscious. However, it is useful to evaluate digital learning environments against this background, for they are evidently not free and open access but industrial products, and there's no reason to believe that their users could check their sources and protect their privacy any better than in other digital environments. Thirdly, although there are also wonderful examples of creative digital contents, the major part of the infrastructure of the digital world is designed and formatted by very few transnational enterprises (GAFAM). The platforms they provide are rigid and narrow, their operating algorithms are for the most part secret and protected by impenetrable patents, and their way of profiting from user information is generally unknown to users. These systems format our psychological, social and natural environments in increasingly decisive ways as they enter into education. This is why it is so important to ask if and how they could be democratically controlled. If the power of digital technology is as intimate and overwhelming as Stiegler has shown, it would be primordial to be able to look into the black boxes of these technologies and ask if they form our psyches, society and natural environments in ways that we agree with. Stieger has shown how the new digital control society affects all processes of individuation in ways which are often destructive to psychic and collective individuation and in many cases leads to loss of desire, to the generalized proletarianisation and spiritlessness. Can the digital world become a new public space? Stiegler himself is quite pessimistic, but at the same time, he finds it primordial that users of technologies constantly ask themselves how to seize and convert 'the means of memory production' for the ends of richer individualisation.

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